CLAIM AMENDMENTS:

Please amend the claims as follows.

1. (Currently Amended) A delta-phase detection method for identifying a burst sequence in a received signal, comprising the steps of:

calculating phase differences of every two consecutive samples in the received signal;

detecting the burst sequence and locating [[the]] an end of the burst sequence by comparing each of the phase differences with an upper threshold and a lower threshold, wherein locating the end of the burst sequence further comprises:

counting a number of successive phase differences within an allowable detecting range, and storing the number of successive phase differences in a counter;

providing a valid counting range according to an expected duration of the burst sequence;

comparing the number in the counter with the valid counting range; and

locating the end of the burst sequence when the number in the counter is within the valid counting range; and

estimating a burst frequency of the burst sequence once ~~detecting~~ the burst sequence is detected.

2. (Original) The method according to claim 1, further comprising the steps of:

band-pass filtering the received signal to eliminate noise before calculating the phase differences; and

low-pass filtering the phase differences to smooth variations of the phase differences.

3. (Currently Amended) The method according to claim 1, wherein detecting the burst sequence and locating the end of the burst sequence further comprises:

providing a factor indicating a maximum fluctuation for the phase differences;

determining the upper threshold and the lower threshold of [[an]]<u>the</u> allowable detecting range according to the factor; <u>and</u>

comparing each of the phase differences with the upper threshold and the lower threshold~~;~~

~~counting a number of successive phase differences within the allowable detecting range, and storing the number in a counter;~~

~~providing a valid counting range according to an expected duration of the burst sequence;~~

~~comparing the counter with the valid counting range; and~~

~~locating the end of the burst sequence when the counter is within the valid counting range~~.

4. (Currently Amended) The method according to claim 1, wherein estimating the burst frequency includes using a linear equation to calculate the burst frequency of the burst sequence from the upper threshold and the lower threshold.

5. (Original) The method according to claim 4, wherein the linear equation for estimating the burst frequency is averaging the upper threshold (A) and the lower threshold (B), and multiplying a sampling frequency (f_s) over two times a ratio of the circumference of a circle to its diameter ($f = \frac{(A+B)*f_s}{4\pi}$).

6. (Original) The method according to claim 1, further comprising adjusting an output frequency of a local oscillator according to the burst frequency, thereby maintaining frequency synchronization.

7. (Currently Amended) A signal processor for identifying a burst sequence in a received signal, comprising:

means for calculating phase differences of every two consecutive samples in the received signal;

means for detecting the burst sequence and locating [[the]] an end of the burst sequence by comparing each of the phase differences with an upper threshold and a lower threshold, wherein said means for locating the end of the burst sequence further comprises:

means for counting a number of successive phase differences within an allowable detecting range, and storing the number of successive phase differences in a counter;

means for providing a valid counting range according to an expected duration of the burst sequence;

means for comparing the number in the counter with the valid counting range; and

means for locating the end of the burst sequence when the number in the counter is within the valid counting range; and

means for estimating a burst frequency of the burst sequence once ~~detecting~~ the burst sequence is detected.

8. (Original) The signal processor according to claim 7 further comprising:

means for band-pass filtering the received signal to eliminate noise before calculating the phase differences; and

means for low-pass filtering the phase differences to smooth variations of the phase differences.

9. (Currently Amended) The signal processor according to claim 7, the means for detecting the burst sequence and locating the end of the burst sequence performs the steps of:

providing a factor indicating a maximum fluctuation for the phase differences;

determining the upper threshold and the lower threshold of [[an]] the allowable detecting range according to the factor; and

comparing each of the phase differences with the upper threshold and the lower threshold~~;~~

~~counting a number of successive phase differences within the allowable detecting range, and storing the number in a counter;~~

~~providing a valid counting range according to an expected duration of the burst sequence;~~

~~comparing the counter with the valid counting range; and~~

~~locating the end of the burst sequence when the counter is within the valid counting range~~.

10. (Original) The signal processor according to claim 7 further comprising means for adjusting an output frequency of a local oscillator according to the burst frequency.

11. (Currently Amended) A delta-phase detection system for identifying a burst sequence in a received signal, comprising:

a band pass filter, receiving and filtering the received signal to eliminate noise;

a delta-phase calculator, coupling to the band pass filter and calculating phase differences of every two consecutive samples in the received signal;

a low pass filter, smoothing variations of the phase differences calculated by the delta-phase calculator; and

a flat line detector, detecting the burst sequence [[and]], locating the end of the burst sequence by comparing each of the phase differences received from the low pass filter with an upper threshold and a lower threshold, and estimating a burst frequency of the burst sequence by using a linear equation to calculate the burst frequency of the burst sequence from the upper threshold and the lower threshold once detecting the burst sequence, wherein the linear equation is averaging the upper threshold (A) and the lower threshold (B), and multiplying a sampling frequency (f_s) over two times a ratio of the circumference of a circle to its diameter ($f = \frac{(A+B)*f_s}{4\pi}$).

12. (Cancelled).

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~~13~~. (Currently Amended) A method for maintaining synchronization between a mobile radio station having a local oscillator oscillating at a local oscillating frequency, and a base station by identifying a burst sequence in a received signal received by the mobile radio station, comprising the steps of:

determining [[the]] a burst frequency of the burst sequence by a delta-phase detecting method, wherein the delta-phase detecting method ~~comprising~~ comprises:

[[(a)]] calculating phase differences of every two consecutive samples in the received signal;

~~(b) detecting the burst sequence and locating the end of the burst sequence by~~ comparing each of the phase differences with an upper threshold and a lower threshold; ~~and~~

counting a number of successive phase differences within an allowable detecting range, and storing the number of successive phase differences in a counter;

providing a valid counting range according to an expected duration of the burst sequence;

comparing the number in the counter with the valid counting range;

locating the end of the burst sequence when the number in the counter is within the valid counting range;

[[(c)]] estimating [[a]] the burst frequency of the burst sequence once ~~detecting~~ the burst sequence is detected; and

adjusting the local oscillating frequency of the local oscillator according to the frequency of the burst sequence to maintain the synchronization.

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~~14~~. (Currently Amended) The method according to claim ~~13~~, wherein the delta-phase detecting method further comprises the steps of:

[[(d)]] band-pass filtering the received signal to eliminate noise before calculating the phase differences; and

[[(e)]] low-pass filtering the phase differences to smooth variations of the phase differences.

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~~15~~. (Currently Amended) The method according to claim ~~13~~, wherein ~~detecting the burst sequence and locating the end of the burst sequence~~ <u>comparing each of the phase differences with the upper threshold and the lower threshold</u> further comprises:

[[(f)]] providing a factor indicating a maximum fluctuation for the phase differences;

[[(g)]] determining the upper threshold and the lower threshold of an allowable detecting range according to the factor~~;~~

~~(h) comparing each of the phase differences with the upper threshold and the lower threshold;~~

~~(i) counting a number of successive phase differences within the allowable detecting range, and storing the number in a counter;~~

~~(j) providing a valid counting range according to an expected duration of the burst sequence;~~

~~(k) comparing the counter with the valid counting range; and~~

~~(l) locating the end of the burst sequence when the counter is within the valid counting range~~.

15 ~~16~~. (Currently Amended) The method according to claim 12 ~~18~~, wherein estimating the burst frequency includes using a linear equation to calculate the burst frequency of the burst sequence from the upper threshold and the lower threshold.

16 ~~17~~. (Original) The method according to claim 15 ~~16~~, wherein the linear equation for estimating the burst frequency is averaging the upper threshold (A) and the lower threshold (B), and multiplying a sampling frequency (f_s) over two times a ratio of the circumference of a circle to its diameter ($f = \frac{(A+B)*f_s}{4\pi}$).

17 ~~18~~. (New) A delta-phase detection method for identifying a burst sequence in a received signal, comprising the steps of:

calculating phase differences of every two consecutive samples in the received signal;

detecting the burst sequence and locating an end of the burst sequence by comparing each of the phase differences with an upper threshold and a lower threshold; and

estimating a burst frequency of the burst sequence by using a linear equation to calculate the burst frequency of the burst sequence from the upper threshold and the lower threshold once detecting the burst sequence, wherein the linear equation is averaging the upper threshold (A) and the lower threshold (B), and multiplying a sampling frequency (fs) over two times a ratio of the circumference of a circle to its diameter ($f = \frac{(A+B)*f_s}{4\pi}$).

~~19~~ 18. (New) The method according to claim ~~18~~ 17, further comprising the steps of:

band-pass filtering the received signal to eliminate noise before calculating the phase differences; and

low-pass filtering the phase differences to smooth variations of the phase differences.

~~20~~ 19. (New) The method according to claim ~~18~~ 17, wherein detecting the burst sequence and locating the end of the burst sequence further comprise:

providing a factor indicating a maximum fluctuation for the phase differences;

determining the upper threshold and the lower threshold of an allowable detecting range according to the factor;

comparing each of the phase differences with the upper threshold and the lower threshold;

counting a number of successive phase differences within the allowable detecting range, and storing the number in a counter;

providing a valid counting range according to an expected duration of the burst sequence;

comparing the counter with the valid counting range; and

locating the end of the burst sequence when the counter is within the valid counting range.

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~~21~~. (New) A method for maintaining synchronization between a mobile radio station having a local oscillator oscillating at a local oscillating frequency, and a base station by identifying a burst sequence in a received signal received by the mobile radio station, comprising the steps of:

determining the frequency of the burst sequence by a delta-phase detecting method, wherein the delta-phase detecting method comprising:

calculating phase differences of every two consecutive samples in the received signal;

detecting the burst sequence and locating the end of the burst sequence by comparing each of the phase differences with an upper threshold and a lower threshold; and

estimating a burst frequency of the burst sequence by using a linear equation to calculate the burst frequency of the burst sequence from the upper threshold and the lower threshold once detecting the burst sequence, wherein the linear equation is averaging the upper threshold (A) and the lower threshold (B), and multiplying a sampling frequency (f_s) over two times a ratio of the circumference of a circle to its diameter ($f = \frac{(A+B)*f_s}{4\pi}$); and

adjusting the local oscillating frequency of the local oscillator according to the frequency of the burst sequence to maintain the synchronization.

~~22~~ 21. (New) The method according to claim ~~21~~ 20, wherein the delta-phase detecting method further comprises the steps of:

band-pass filtering the received signal to eliminate noise before calculating the phase differences; and

low-pass filtering the phase differences to smooth variations of the phase differences.

~~23~~ 22. (New) The method according to claim ~~21~~ 20, wherein detecting the burst sequence and locating the end of the burst sequence comparing each of the

phase differences with the upper threshold and the lower threshold further comprises:

providing a factor indicating a maximum fluctuation for the phase differences;

determining the upper threshold and the lower threshold of an allowable detecting range according to the factor;

comparing each of the phase differences with the upper threshold and the lower threshold;

counting a number of successive phase differences within the allowable detecting range, and storing the number in a counter;

providing a valid counting range according to an expected duration of the burst sequence;

comparing the counter with the valid counting range; and

locating the end of the burst sequence when the counter is within the valid counting range.

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~~24~~. (New) A signal processor for identifying a burst sequence in a received signal, comprising:

means for calculating phase differences of every two consecutive samples in the received signal;

means for detecting the burst sequence and locating the end of the burst sequence by comparing each of the phase differences with an upper threshold and a lower threshold; and

means for estimating a burst frequency of the burst sequence by using a linear equation to calculate the burst frequency of the burst sequence from the upper threshold and the lower threshold once detecting the burst sequence, wherein the linear equation is averaging the upper threshold (A) and the lower threshold (B), and multiplying a sampling frequency (f_s) over two times a ratio of the circumference of a circle to its diameter ($f = \frac{(A+B)*f_s}{4\pi}$).

24 ~~25~~. (New) The signal processor according to claim 23 ~~24~~ further comprising:

means for band-pass filtering the received signal to eliminate noise before calculating the phase differences; and

means for low-pass filtering the phase differences to smooth variations of the phase differences.

25 ~~26~~. (New) The signal processor according to claim 23 ~~24~~, the means for detecting the burst sequence and locating the end of the burst sequence performs the steps of:

providing a factor indicating a maximum fluctuation for the phase differences;

determining the upper threshold and the lower threshold of an allowable detecting range according to the factor;

comparing each of the phase differences with the upper threshold and the lower threshold;

counting a number of successive phase differences within the allowable detecting range, and storing the number in a counter;

providing a valid counting range according to an expected duration of the burst sequence;

comparing the counter with the valid counting range; and

locating the end of the burst sequence when the counter is within the valid counting range.

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~~27~~. (New) The signal processor according to claim ~~24~~ 23 further comprising means for adjusting an output frequency of a local oscillator according to the burst frequency.